user's manual

# NVAHD-1DN5102V/IR-1

NOVUS®

# INFORMATION

**EMC (2004/108/EC) and LVD (2006/95/EC ) Directives**

**CE Marking**

Our products are manufactured to comply with the requirements of the following directives and national regulations implementing the directives:

- Electromagnetic compatibility EMC 2004/108/EC.
- Low voltage LVD 2006/95/EC with further amendment. The Directive applies to electrical equipment designed for use with a voltage rating of between 50VAC and 1000VAC as well as 75VDC and 1500VDC.



**WEEE Directive 2002/96/EC**
**Information on Disposal for Users of Waste Electrical and Electronic Equipment**

This appliance is marked according to the European Directive on Waste Electrical and Electronic Equipment (2002/96/EC) and further amendments. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

The symbol on the product, or the documents accompanying the product, indicates that this appliance may not be treated as household waste. It shall be handed over to the applicable collection point for used up electrical and electronic equipment for recycling purpose. For more information about recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

**RoHS Directive 2002/95/EC**

Out of concern for human health protection and friendly environment, we assure that our products falling under RoHS Directive regulations, regarding the restriction of the use of hazardous substances in electrical and electronic equipment, have been designed and manufactured in compliance with the above mentioned regulations. Simultaneously, we claim that our products have been tested and do not contain hazardous substances whose exceeding limits could have negative impact on human health or natural environment.

**Information**

The device, as a part of professional CCTV system used for surveillance and control, is not designed for self installation in households by individuals without technical knowledge.

The manufacturer is not responsible for defects and damages that result from improper or inconsistent with user's manual installation of the device in the system.

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# SAFETY REQUIREMENTS

**WARNING!**

THE KNOWLEDGE OF THIS MANUAL IS AN INDESPENSIBLE CONDITION OF A PROPER DEVICE OPERATION. YOU ARE KINDLY REQUSTED TO FAMILIRIZE YOURSELF WITH THE MANUAL PRIOR TO INSTALLATION AND FURTHER DEVICE OPERATION.

**WARNING!**

USER IS NOT ALLOWED TO DISASSEMBLE THE CASING AS THERE ARE NO USER-SERVICEABLE PARTS INSIDE THIS UNIT. ONLY AUTHORIZED SERVICE PERSONNEL MAY OPEN THE UNIT

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INSTALLATION AND SERVICING SHOULD ONLY BE DONE BY QUALIFIED SERVICE PERSONNEL AND SHOULD CONFORM TO ALL LOCAL REGULATIONS

**WARNING!**

PRIOR TO UNDERTAKING ANY ACTION THAT IS NOT DESCRIBED FOR THE GIVEN PRODUCT IN USER'S MANUAL AND OTHER DOCUMENTS DELIVERED WITH THE PRODUCT, OR IF IT DOES NOT ARISE FROM THE USUAL APPLICATION OF THE PRODUCT, MANUFACTURER MUST BE CONTACTED UNDER THE RIGOR OF EXCLUDING THE MANUFACTURER'S RESPONSIBILITY FOR THE RESULTS OF SUCH AN ACTION.

**IMPORTANT SAFEGUARDS AND WARNINGS**

1. Prior to undertaking any action please consult the following manual and read all the safety and operating instructions before starting the device.
2. Please keep this manual for the lifespan of the device in case referring to the contents of this manual is necessary;
3. All the safety precautions referred to in this manual should be strictly followed, as they have a direct influence on user's safety and durability and reliability of the device;
4. All actions conducted by the servicemen and users must be accomplished in accordance with the user's manual;
5. The device should be disconnected from power sources during maintenance procedures;
6. Usage of additional devices and components neither provided nor recommended by the producer is forbidden;
7. Mounting the device in places where proper ventilation cannot be provided (e. g. closed lockers etc.) is not recommended since it may lead to heat build-up and damaging the device itself as a consequence;
8. Mounting the camera on unstable surface or using not recommended mounts is forbidden. Improperly mounted camera may cause a fatal accident or may be seriously damaged itself. The camera must be mounted by qualified personnel with proper authorization, in accordance with this user's manual.

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# SAFETY REQUIREMENTS

9. Device should be supplied only from a power sources whose parameters are in accordance with those specified by the producer in the camera technical datasheet. Therefore, it is forbidden to supply the camera from a power sources with unknown parameters, unstable or not meeting producer's requirements;
10. Signal cables (conducting TV or / and telemetric signal) should be placed in a way excluding the possibility of damaging them by accident. Special attention must be paid to cables getting from the camera and connecting the power supply;
11. To avoid equipment damage, whole TV circuit should be equipped with properly made discharge-, overload- and lightning protection devices. Usage of separating transformers is advised;
12. Electric installation supplying the device should be designed to meet the specifications given by the producer in such a way that overloading is impossible;
13. User cannot repair or upgrade the equipment himself. All maintenance actions and repairs should be conducted only by qualified service personnel;
14. Unplug the camera from the power source immediately and contact the proper maintenance department when the following occurs:

- Damages to the power cord or to the plug itself;
- Liquids getting inside the device or exposure to strong mechanical shock;
- Device behaves in a way not described in the manual and all adjustments approved by the manufacturer and possible to apply by user himself, seem not to have any effect;
- Camera is damaged;
- Atypical behaviour of the camera components may be seen (heard).

16. In necessity of repairs attention to using only original replacement parts (with their parameters in accordance with those specified by the producer) should be paid. Non-licensed service and non-genuine replacement parts may cause fire or electrocution;
17. After maintenance activities tests should be run to ensure proper operation of all the functional components of the device.

Novus AHD cameras are dedicated to work with Novus AHD DVRs. Using only Novus products guarantees the highest image quality. Connecting Novus AHD cameras to DVRs from other manufacturers may decrease video quality.

**Attention!**
**Technical changes reserved without prior notice and printing errors possible.**

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# FOREWORD INFORMATION

## 1. PACKAGE CONTENTS

- NVAHD-1DN5102V/IR-1 camera
- User's manual
- A set of screws and dowels
- Allen key
- Mounting template

If any of the listed equipment has been damaged during transport or if the package is incomplete, the contents of package should be packed back in to the original box. Please contact your local NOVUS distributor for further assistance.



## 2. MAIN CHARACTERISTIC

- Mechanical IR cut filter
- IR operation capability
- Horizontal resolution: 720p
- Min. illumination: from 0.00005 lx/F=1.4 (0lx with IR on)
- Lens type: varifocal, f=2.8 ~ 11mm
- Built-in IR illuminator: 2 high-power LED
- Light sensor
- 2DNR and 3DNR digital noise reduction
- WDR - wide dynamic range
- SENS-UP - digital slow shutter (DSS)
- BLC - back light compensation
- HLC - high light compensation
- DEFOG - improves visibility during fog and rain
- The ability to work in 720p AHD mode and analog 960H mode
- Stabilization of IR LED current for extending their service life
- Other functions:
  - 4 motion detection zones,
  - 4 privacy zones,
  - mirror effect, freeze, negative image
  - defective pixels correction
  - defining the camera name
  - adjusting the brightness and sharpness
- Operation in PAL and NTSC systems
- OSD menu
- Power supply: 12VDC

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# SPECIFICATION

## 3. SPECIFICATION

| | |
|---|---|
| **IMAGE** | |
| **Pick-up element** | 1/3'' SONY, CMOS, 1.3 Mpx imager |
| **Number of effective pixels** | 1280 (H) x 1024 (V) |
| **Horizontal resolution** | 720p |
| **Min. illumination** | 0.25 lx/F=1.4 - color mode (1/50 s),<br>0.005 lx/F=1.4 - b/w mode (1/50 s),<br>0.0005 lx/F=1.4 - color mode DSS,<br>0.00005 lx/F=1.4 - b/w mode DSS<br>0 lx (IR on) – b/w mode |
| **S/N ratio** | >52 dB |
| **Electronic shutter** | auto/manual: 1/25s ~ 1/50 000s (for AHD) and 1/50s ~ 1/50 000s (for analog 960H) |
| **Digital slow shutter (DSS)** | up to 30x |
| **LENS** | |
| **Type** | varifocal, f=2.8 ~ 11mm/F=1.4 |
| **Angle of View (H)** | 92° ~ 32° (for AHD), 88° ~ 30° (for analog 960H) |
| **DAY/NIGHT** | |
| **Type** | mechanical IR cut filter |
| **Switching Mode** | auto/manual |
| **Switching Level Adjustment** | yes |
| **Switching Delay** | 0-60 s |
| **OTHER FUNCTIONS** | |
| **OSD** | English, Polish, Russian and others |
| **Back Light Compensation (BLC)** | yes |
| **High Light Compensation (HLC)** | yes |
| **Wide Dynamic Range (WDR)** | yes |
| **Digital Noise Reduction (DNR)** | yes |
| **Defog** | yes |
| **Privacy Zones** | 4 zones |
| **Motion Detection** | 4 zones |
| **Image Processing** | mirror effect, rotate, sharpening |
| **IR ILLUMINATOR** | |
| **LED number** | 2 |
| **Range** | 30 m |
| **Angle** | 120° |
| **INTERFACES** | |
| **Video output** | BNC, 1.0 Vp-p, 75 Ohm |
| **INSTALLATION PARAMETERS** | |
| **Dimensions (mm)** | 120 (Ø) x 98 (L) |
| **Weight** | 790 g |
| **Enclosure** | vandal proof, aluminium, in ivory |
| **Power Supply** | 12 VDC +/- 10% |
| **Power Consumption** | 1,5 W (4,5 W IR on) |
| **Operating Temperature** | -30ºC ~ 40ºC |
| **Degree of protection** | IP 66 |

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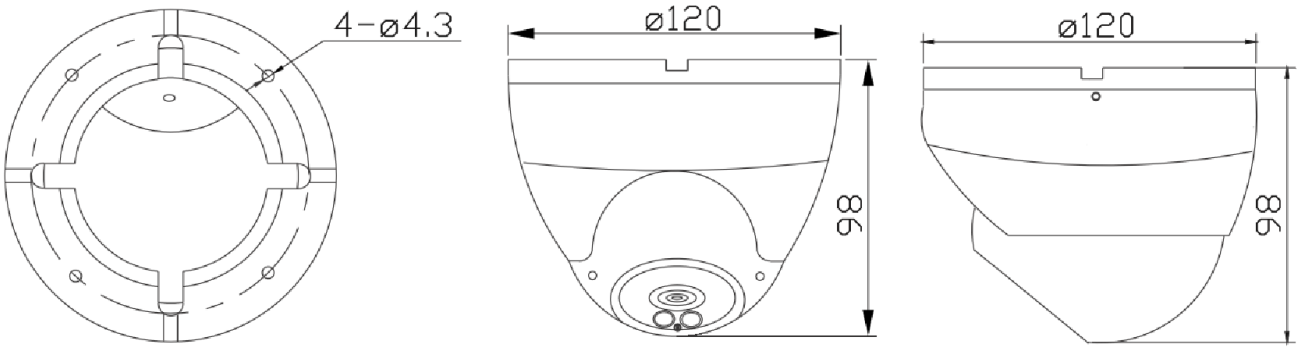
# SPECIFICATION



## 3.1. Dimensions:




## 3.2. View of the camera, layout of the camera items:

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# INSTALLATION



## 4. INSTALLATION

Please familiarize yourself with the device, its parameters and methods of mounting, before mounting .

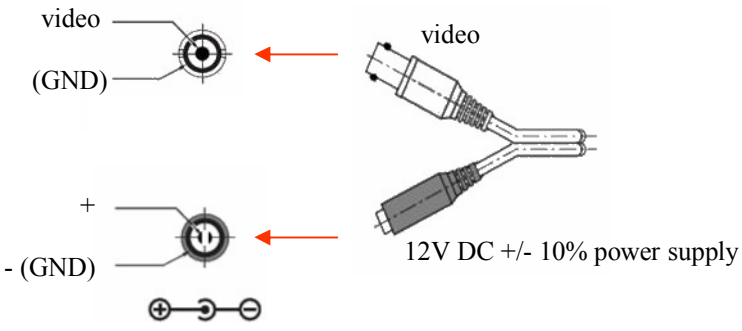
- Put mounting drawing paper to the wall or ceiling and mark drill holes.
- Drill holes using markings.
- Drill additional hole for video and power cables.
- Using mounting screws from the package, attach the base of camera to the ceiling/wall (holding the camera with hand if needed).
- Put video and power cables through a base of camera and a previously drilled hole in the wall/ ceiling.
- Put the dome cover on the camera (holding the camera with hand if needed).
- Put the stopping ring on the dome cover and gently screw it to the base .
- Manually point the camera in a desired direction to obtain a desired scene view.
- Screw the stopping ring firmly (holding the camera with hand if needed).
- Adjust zoom and focus if needed using adjustment screws. It is recommended to check focus settings in infrared illumination and make correction in color mode to have proper focus in both modes.
- Make the appropriate camera settings via the OSD menu

**NOTE:**
**It is possible to switch camera into analog 960H mode, which is e.g. compatible with service monitor. To change mode tilt the joystick to the left and hold for about 5 seconds. To return to the AHD mode, tilt the joystick to the right and hold for about 5 seconds. The default mode of the camera is AHD mode.**

**By pressing and holding the joystick down (DN) camera switches between PAL and NTSC systems. The default operating mode of the camera is PAL.**

### 4.1. Power supply connection

**NOTE: Device should be supplied only from a power sources whose parameters are in accordance with those specified by producer in the camera's technical datasheet. Therefore, it is forbidden to supply the camera from power sources whose parameters are unknown, unstable or not meeting the producer's requirements.**

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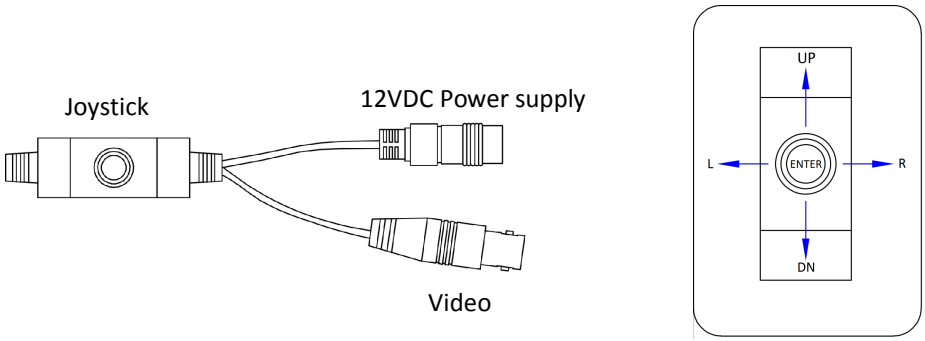
## 5. SETTINGS

The camera has an OSD menu displayed in the foreground of image. During normal operation status information can be displayed on the image. To navigate menu and make changes please use joystick located on the cable of the camera:




To enter the menu, press the joystick, which sends **ENTER** command to the device. To choose submenu, select the **UP, DOWN (UP, DN)** directions. If the sub-menu contains the symbol ↵ that indicates the opportunity to enter to the settings by pressing the **ENTER** key. To change the parameters of selected items, press **LEFT, RIGHT** buttons. To exit the menu and saves changes, select **EXIT** and next select **SAVE & END.** By selecting **RESET** you can restore the factory settings, and by selecting **NOT SAVE** you can exit the menu without saving changes. To exit the submenu, select **RETURN** and press **ENTER.** Choosing (with left or right button) **SAVE & END** in the **RETURN** position saves changes and closes the menu.

In case of the image failure after connecting camera, or video loss due to changes in the menu, it is possible to restore the factory settings. Following procedure is also recommended when camera menu is not working. To restore factory settings:

1. Turn the power off and on again.
2. If the picture does not appear, perform the following sequence of joystick keys:
   press ENTER, UP, RIGHT, press ENTER.

Successful completing these steps restores factory settings (AHD 720p, PAL).

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# SETTINGS

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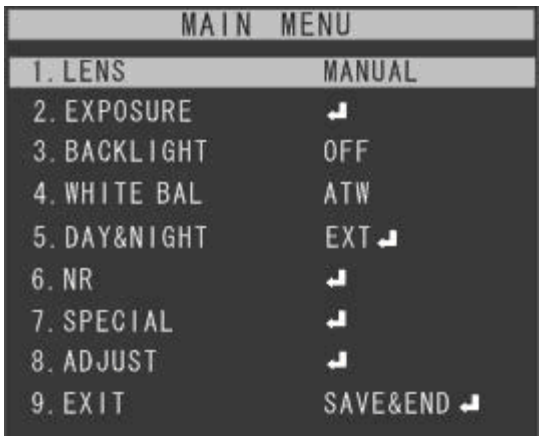
## 5.1. Main menu

In order to enter the menu press the joystick button (**ENTER** command). The following menu is displayed on the screen:

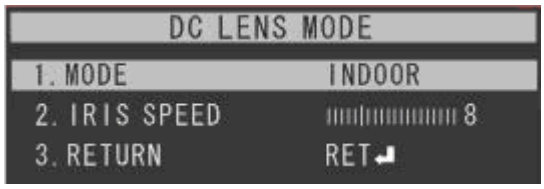



### 5.1.1 LENS submenu

This submenu allows to set lens parameters:

**MANUAL** - manual iris lens or fixed iris lens

**DC** - auto iris mode (DC signal control) - opens another sub-menu.



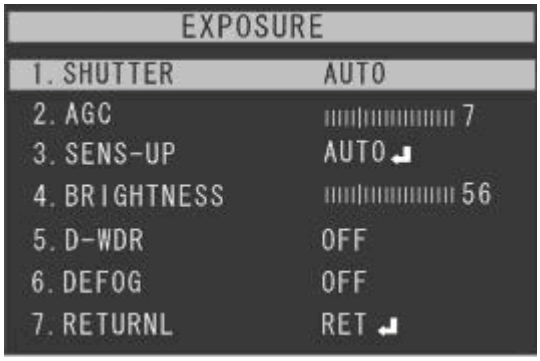

**MODE** - selects the operating inside mode (**INDOOR**) or outside mode (**OUTDOOR**)

**IRIS SPEED** - sets the shutter speed (0 to 15).

**OUTDOOR** mode opens another sub-menu where you can set the minimum and maximum aperture.

### 5.1.2 EXPOSURE submenu

This submenu contains exposure and shutter speed settings.

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**SHUTTER** - shutter mode control. Allows you to choose the automatic mode (**AUTO**), the manual mode with adjustable shutter speed in the range of 1/25 ~ 1/50000s and ability to enable the DSS function in the range from x2 to x30, and flicker reduction (**FLK**).

**AGC** - Sets AGC gain. Higher gain make a scene brighter, but noise increases. It allows to adjust the gain in the range from 0 to 15.

**SENSUP** - Digital Slow Shutter function - helps to obtain better, brighter images in low light by selecting the multiplier of shutter speed in the range from x2 to x30 (opens another sub-menu).

**BRIGHTNESS -** sets brightness level in the range from 1 to 100.

**D-WDR** - this function allows to enable/disable wide dynamic range function that enables to observe the scene with different illumination levels. After selecting this function, there is a submenu to adjust the level in the range from 0 to 8.

**DEFOG** - allows you to enable correction functions of image disrupted by the influence of fog, rain, etc. It opens another sub-menu that allows you to set the zone and the degree of noise reduction.

### 5.1.3 BACKLIGHT submenu

These compensation functions allow to enhance visibility of the objects located in the foreground, surrounded by strongly illuminated background (**BLC**) or for enhancing visibility of the objects located near the strong light source (**HSBLC**).

**BLC** - function allows to enhance visibility of the objects located in the foreground, surrounded by strongly illuminated background. Pressing **ENTER** button in this mode displays the following menu:

Submenu presented allows to set the size and location of the area where the **BLC** function is active, furthermore it allows to set the sensitivity of the function.

**HSBLC** - high light compensation function. It allows to enhance visibility of the objects located near the strong, point light source. If a strong, point light source appears on the screen , function will mask it for effective observation of the scene itself (this function is recommended e.g. to observe car licence plates). Selecting HSBLC displays following screen:

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# SETTINGS

**SELECT -** allows to select one of the four areas of HSBLC function

**DISPLAY** - enables or disables previously selected zone.

**BLACK MASK** - enables or disables masking area

**LEVEL** - adjusts intensity function between 0-100

**MODE - (ALL DAY/NIGHT)** determines whether the function is running all the time or only at night (recommended).

**DEFAULT -** restores default HSBLC settings.



### 5.1.4 WHITE BAL submenu

This feature allows to set appropriate color settings using following options:

**ATW** - auto tracking white balance based on color temperature.

**AWC→SET** - this mode enables adaptive setting of white balance. In order to obtain the optimum state under the current illumination, direct the camera at a sheet of white paper and press **ENTER**. When lighting parameters change (e.g. light bulbs changed to halogen lamps, daylight to artificial light etc. ), procedure mentioned above should be repeated;

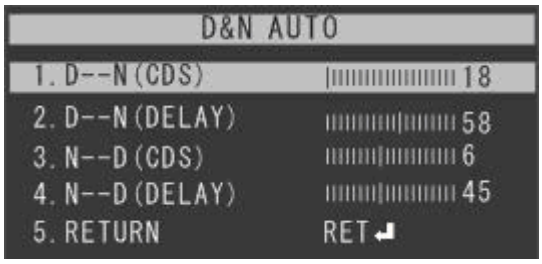
**AWB** - auto white balance adjustment.

**MANUAL** - manual mode settings. In case of inappropriate color settings for **ATW, AWC** modes it is possible to set **RED** and **BLUE** values manually. Color values range from 0 to 100 and are represented by sliders. Any change in the color components are instantly applied to the image.

### 5.1.5 D&N submenu

Allows to adjust day/night settings. Available settings are: **AUTO, EXT, COLOR, B/W.**

**AUTO -** camera switches between night (b/w) and day (color) mode automatically, depending on current illumination conditions. Settings are available at following sub-menu:




**D--N (CDS)** and **N--D (CDS)** - sets the illumination threshold that switches the camera from day to night mode and from night to day mode (respectively 6~255 and 0~249)

**D--N (DELAY)** and **N--D (DELAY)** - sets the delay between color and b/w mode switching and between b/w and color mode (0~60s)

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**B/W** - forces continuous black & white mode. Selecting displays following submenu for adjusting additional values:

**BURST** - enables/disable chrominance signal synchronization.

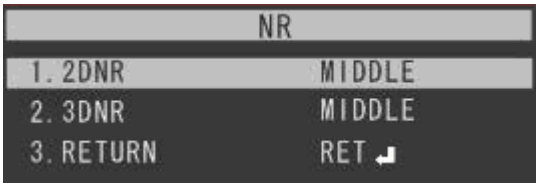
**IR SMART** - function ensuring balanced brightness level of the picture during operation with an IR illuminator (which prevents overexposure of the objects located close to the camera and its illuminator). Entering the function allows to set function area and sensitivity, in the same manner as in motion detection menu.

**IR PWM** - unavailable



### 5.1.6 NR submenu

Allows to make settings for digital noise reduction function. Pressing **ENTER** button in this mode displays the following menu:



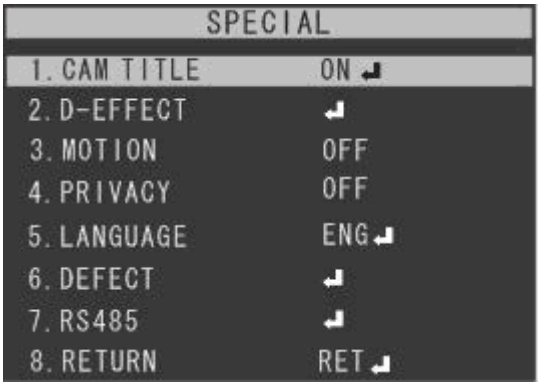

**2DNR** - allows to set the level of noise reduction for static parts of the image (available settings: **OFF, LOW, MIDDLE, HIGH**)

**3DNR** - allows to set the level of noise reduction variables (dynamic) parts of the image (available settings: **OFF, LOW, MIDDLE, HIGH**)

**NOTE:**
**In the 960H analog mode only 2DNR noise reduction is available.**

### 5.1.7 SPECIAL submenu

Allows to set additional camera features. Pressing **ENTER** button in this mode displays the following menu:

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# SETTINGS

**CAM TITLE** - allows to enter a string of characters that will be displayed on the screen, e.g. as camera title. Screen contains mainly alphanumerical characters, which may be used in camera's title. Select desired character and press **ENTER** key. Currently edited title is visible at the bottom of the screen. Line above it contains buttons for editing the title. To enable particular functions, please highlight them as normal characters and confirm by pressing **ENTER**. Button functions are described below:

← - moves character highlight cursor left.

→ - moves character highlight cursor right.



**POS** - adjusts the position of entered characters.

**CLR** - erases the whole title.

**END** - exits title editing menu.

**D-EFFECT** - submenu allows to set additional digital functions:

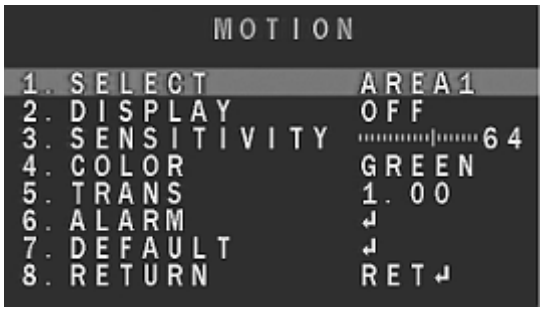
**FREEZE -** holds the picture currently displayed.

**MIRROR -** allows to change viewpoint as **MIRROR**, **ROTATE**, **V-FLIP**.

**NEG. IMAGE -** enables/disables displaying negative video image.

**MOTION** - allows (provided that **ON** option is selected) to turn a built-in motion detection feature on or off. Motion detection may simultaneously be conducted in four independent zones (with their size and location selectable by user). Detection of motion displays an „**MOTION DETECTED**" information superimposed on the screen.

After selecting **ON** and pressing **ENTER** adjust motion detection settings is displayed, as depicted below:




**SELECT** - selects the number of the area for further settings.

**DISPLAY** - turns on/off particular area. Also allows to set the position and size of the area.

**SENSITIVITY** - refers to sensitivity

**COLOR** - sets the color visualization of motion in a particular area

**TRANS** - allows to set the transparency level of visualization

**ALARM** - displays submenu where user can set motion visualization mode (**OFF**, **BLOCK**, **OUTLINE**, **ALL**), enable or disable displaying „**MOTION DETECTED**" information and set its display time (1 ~ 15 s). Options **ALARM OUT** and **ALARM SIG** are inactive.

**DEFAULT** - restores default settings.

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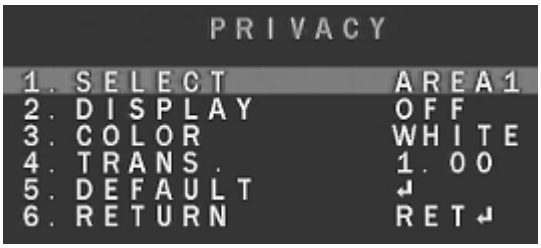
**PRIVACY** - allows to enable (by selecting **ON**) privacy zones. Part of the screen may be masked using four rectangular zones. Selecting **ON** and pressing **ENTER** displays a sub-menu, containing four masks positions.




**SELECT** - selects the number of the area for further settings.

**DISPLAY** - turns on/off particular area. Available masking methods: with overlaid color, color reversal or tessellation (**COLOR, INV, MOSAIC**). Pressing **ENTER** after selecting **COLOR**, **INV** or **MOSAIC** option will open a new submenu which allows to set the position and size of the zone.

**COLOR** - sets the color masking (available only if **COLOR** option was chosen).

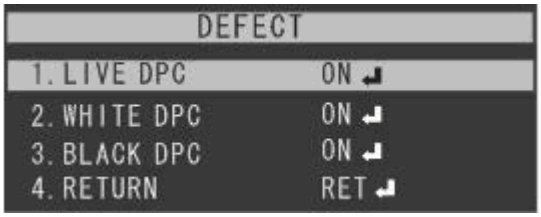
**TRANS** - allows you to set the degree of transparency mask (available only if **COLOR** option was chosen).

**DEFAULT** - restores default settings.

**LANGUAGE -** switches between OSD languages: Polish, English, Russian and others.

**DEFECT** - allows to adjust parameters used in Dead Pixel Correction function:

**LIVE DPC** - sets parameters of the defective pixel correction function in real time. Selecting **ON** and pressing **ENTER** button opens a submenu for setting the gain level and the level of correction.




**WHITE DPC** - allows to a correct "hot pixels". Selecting **ON** and pressing **ENTER** button opens a submenu where you can specify the size and location of the zone in which the correction will be made (position **POS/SIZE**), then define the level of correction and amplification (**LEVEL** and **AGC** positions) and set **SENS-UP** option (if camera uses **SENS-UP** position). Then select **START** position and press **ENTER**, cover the lens tightly and press **ENTER** again. After correcting process the camera returns to the **DPC WHITE** menu. In the **DPC VIEW** you can check the correction effect and, if needed repeat the operation with different settings.

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# SETTINGS

**BLACK DPC** - allows to correct (mask) dead pixels. Selecting ON and pressing ENTER button opens a submenu which define the size and location of the zone in which the correction is made (position POS/SIZE), then define the compensation level (position LEVEL). Then select **START** position and press **ENTER** button and wait for the end of the operation. In the **DPC VIEW** check the correction effect and, if needed repeat the operation with different settings.

**RS485** - option disabled

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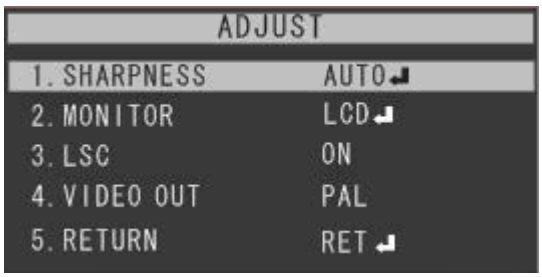
### 5.1.8 ADJUST submenu

It allows to perform additional image adjustment. After pressing **ENTER**, the following submenu is dispalyed:




**SHARPNESS** - allows to disable (**OFF**) and enable (**AUTO**) sharpness correction function. After selecting **AUTO** and pressing **ENTER**, next submenu is displayed, where it is possible to set the degree of correction and gain ranges for compensation

**MONITOR** - corrects the image parameters depending on chosen monitor (LCD monitor or CRT monitor). After pressing **ENTER**, the submenu is displayed where fine adjustments can be made.

**LSC** - enables and disables the function of increasing the brightness of the image edge

**VIDEO OUT** - chooses a system in which the camera works (PAL or NTSC)

INFORMATION:
For camera mode analog 960H in the **ADJUST** menu there are two additional items:

**MONITOR OUT** - switches the aspect ratio between 4:3 and 16:9
**COMET** - option disabled

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# NOTES



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2015-04-08 TF, TŁ, MK